

AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently Amended) An optical device, comprising a laser diode having a ridge waveguide located above an active layer and adapted to guide light from a first end to a second end of the waveguide, and said waveguide further comprising having a distributed reflector in the form of a lattice of individual elements, wherein the elements are arranged in a two-dimensional array on either side of the ridge waveguide and between the first and second end of the waveguide.

2. (Original) An optical device as claimed in claim 1, wherein the distributed reflector comprises a structure in material above the active layer on either side of the ridge waveguide.

3. (Previously Presented) An optical device as claimed in claim 1, wherein the two-dimensional array is in a plane parallel to the active layer and extends to a depth comparable to that of the active layer.

4. (Previously Presented) An optical device as claimed in claim 1, wherein the individual elements are holes.

5. (Original) An optical device as claimed in claim 4, wherein the holes are arranged in a hexagonal array.

6. (Original) An optical device as claimed in claim 4, wherein the holes are arranged in a square array.

7. (Previously Presented) An optical device, as claimed in claim 4, wherein the holes extend to a depth comparable to that of the active layer in a direction that is perpendicular to the plane parallel to the active layer.

8. (Previously Presented) An optical device, as claimed in claim 4, wherein the holes extend to a depth comparable to that of the active layer in a direction that is not perpendicular to the plane parallel to the active layer.

9. (Previously Presented) An optical device, as claimed in claim 4, wherein the holes are regions of different refractive index to that of the device structure.

10. (Previously Presented) An optical device, as claimed in claim 4, wherein the holes are regions of different gain or loss to that of the device structure.

11. (Previously Presented) An optical device, as claimed in claim 3, wherein the distributed reflector does not pierce the active region.

12. (Previously Presented) An optical device, as claimed in claim 3, wherein the distributed reflector partially pierces the active region.

13. (Previously Presented) An optical device, as claimed in claim 3, wherein the distributed reflector fully pierces the active region.

14. (Previously Presented) An optical device, as claimed in claim 1, wherein the distributed reflector is within the device.

15. (Original) An optical device, as claimed in claim 14, wherein the distributed reflector is within a pumped region.

16. (Original) An optical device as claimed in claim 14, wherein the distributed reflector is within an un-pumped region.

17. (Previously Presented) An optical device as claimed in claim 1, with means for varying the electrical bias or biases applied to the device to obtain efficient optical emission in single wavelength operation.

18. (Currently Amended) An optical device, as claimed in claim 17, wherein the emission wavelength may be ~~controlled/tuned~~ controlled or tuned.

19. (Previously Presented) An optical device, as claimed in claim 1, which is integrated with separate amplifying, absorbing or passive sections.

20. (Currently Amended) An optical device, as claimed in claim 19, where the amplifying or absorbing sections have ~~gain/loss~~ gain or loss modulation.

21. (Previously Presented) An optical device, as claimed in claim 1, with means for being pulsed.

22. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 16, wherein the holes are defined as regions of different gain or loss to that of the component structure.

23. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 16, wherein the holes are defined as regions of different refractive index and gain or loss to the component structure.

24. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 16, wherein the grating may be introduced across the waveguide or waveguides on one or both sides.

25. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 16, wherein the grating does not pierce the active region, partially pierce active region or possibly fully pierces the active region.

26. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 16, wherein distributed gratings may be allowed within devices.

27. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 16, wherein gratings may be allowed in pumped or un-pumped regions.

28. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 26, wherein pumping may be of an electrical or optical nature.

29. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 18, wherein any electrical contacts may be isolated.

30. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 16, wherein the emission wavelength may be ~~controlled/tuned~~ controlled or tuned.

31. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 16, wherein the device may be operated at high speed.

32. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 16, which operates mode-hop-free.

33. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 16, which is integrated with separate amplifying, absorbing or passive sections.

34. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 33, where the amplifying or absorbing regions may have gain/loss modulated.

35. (Currently Amended) An ~~optoelectronic component~~ optical device, as claimed in claim 16, which may be pulsed by gain switching, Q-switching or mode-locking techniques.

36. (New) An optical device comprising:

an active layer;

a laser diode further comprising a ridge waveguide having a first end and a second end and opposite sides between the first end and second end, wherein said waveguide guides light from the first end to the second end, and

a distributed reflector arranged on each of the opposite sides of the waveguide, wherein each of said reflectors comprises a lattice of individual elements.